

SECTION III: REMEDIAL MEASURES

What are “remedial measures”?

The term "remedial measures" is used to describe actions undertaken to remedy environmental contamination problems. In the case of an asbestos disposal site, the term more specifically refers to actions which will provide long-term assurance that humans will not be exposed to asbestos at, or from, the site.

What remedial measures are typically used at an asbestos disposal site?

There are three basic approaches to remedying environmental contamination at an asbestos disposal site, either:

- Have all of the asbestos waste removed from the site to an authorized, secure landfill; or
- Have the site "capped" by covering the asbestos waste with non-asbestos-containing materials (for example, clean soil and vegetation) which are designed to prevent the waste from becoming re-exposed; or
- Have a combination of the above implemented.

Each of the alternatives requires professional assistance, typically involving specially trained and licensed contractors, industrial hygienists, and civil engineers with earthwork and waste management experience.

Which remedial alternative (removal vs. capping) is best?

The "best" remedial alternative depends on a number of factors, including:

- The specific characteristics of the site (e.g., type and quantity of waste; location and depth of waste; terrain, drainage, and other geophysical features; and presence of buildings, driveways, underground utilities, and the like); and
- The exposure risks posed by existing and allowable land use activities at the site.

Although waste removal can eliminate the long-term risks associated with a site, removal activities involving a large quantity of asbestos waste can significantly increase short-term risks, particularly in areas where the excavation work is difficult due to terrain conditions, poor access, unanticipated events including windy weather, and other factors. Further, removal can sometimes be the more costly solution in terms of up-front dollars. Following removal, the waste must be disposed at a permitted, secure landfill, thus involving transportation costs and disposal fees. The cost of refilling the excavated area with clean soil must also be considered, in addition to all other typical project costs, including air monitoring, site security, personal protection including respirators and disposable clothing, decontamination provisions for equipment and personnel, and use of specially licensed contractors.

When removal is not feasible, capping the waste in-place can provide a practical and cost-effective long-term solution, provided that the cap is properly designed, the best management practices specified in Section IV of this guide are strictly observed, and additional activity and property use restrictions are instituted as necessary to protect and maintain the cap for perpetuity.

What are the criteria for designing a cap?

To provide effective performance, a cap must be designed to completely isolate all of the asbestos-containing waste materials, in order to eliminate all pathways for human exposure (inhalation, ingestion, direct contact). The cap must also be designed to not deteriorate or become damaged under all anticipated site conditions. This means the cap must be designed to withstand the forces of nature (wind, water, frost, etc.) and, at sites used for human activity, the forces induced by such activity. For example, if the disposal area is used as a parking lot or driveway, the cap must be designed to support vehicular loads and withstand routine maintenance, including snow removal and the application of de-icing agents.

Federal requirements set forth in the National Emission Standards for Hazardous Air Pollutants or "NESHAP" (ref. 40 CFR 61.151) specify that inactive asbestos disposal sites must be covered by no less than 6 inches of non-asbestos-containing material, with vegetation, (i.e. clean soil and grass). However, if buried asbestos waste is subjected to repeated freeze/thaw cycles, it may eventually resurface. Therefore, to construct a cap that will minimize the potential for frost induced resurfacing, the asbestos should be buried beneath the frost line. Studies have shown that in the Nashua/Hudson area, at least 2 feet of soil cover is needed to protect against resurfacing over a 100-year period. Other types of cover materials, for example geotextiles, asphalt, and concrete, can also be used in some situations to form a barrier against resurfacing.

Soil caps must be compacted and graded to facilitate appropriate drainage patterns and to control erosion. In addition, the surface must be seeded, rip rapped, or otherwise treated to also protect against soil erosion. If the cap intercepts a surface water body and/or is situated in a flood hazard area, for example a cap situated along the edge of a wetland or river, special design considerations must be employed to withstand the anticipated water action and saturated conditions. For example, gabions (wire cages filled with stone) or standard rip rap can be effective choices for treating the surface of caps along water bodies.

Each site is different and, therefore, each cap design will likely be different. However, the underlying performance objective of providing a low maintenance, sustainable solution, must always be achieved in order for the remedial effort to be considered complete.

What is the process for initiating and undertaking remedial action?

NHDES has established a program to provide technical assistance to owners of asbestos disposal sites. Owners who undertake remedial action should first contact NHDES to coordinate the progression of remedial activities, to assure that the work is consistent with the remedial criteria and regulatory requirements.

There are four basic stages of remedial work:

- First, a site investigation is undertaken to characterize the site.
- Second, remedial options are evaluated and a decision made to either remove the waste, cap it in-place, or use a combination of both.
- Third, a remedial action plan (RAP) is developed, including cap design plans/specifications and provisions for safely carrying out the proposed work.
- Fourth, the RAP is implemented.

For additional detail about initiating and implementing the remedial action process, contact NHDES. See Section V for contact information.

I expect remedial action to be costly. Why should I consider it?

A fully remediated site is protective of human health. This is an important consideration, whether the site is owner occupied, leased or publicly owned/accessed. In addition, a site which is fully remediated is more likely to realize its maximum resale value and lending potential.

